

CLAIMS:

1. A primary radio station (4) for use in a communication system comprising a plurality of secondary radio stations (1), said primary station having:

a multi-directional controllable antenna structure (A(1)-A(6)), for transmitting / receiving radio signals,

5 acquisition means (17, 18) for acquiring data relating to at least one of said secondary stations from at least one received radio signal,

selection means (18) for selecting, when possible, based on acquired data, at least an active secondary station (B_ACT), and at least an alternative secondary station (B_ALT(j)) suitable for becoming active,

10 calculation means (18, 19) for calculating the directions (H_ACT, H_ALT(j)) of signals received from the selected secondary stations (B_ACT, B_ALT(j)),

storage means (18) for storing the calculated directions,

control means (C(1)-C(6)) for controlling said antenna structure depending on stored directions.

15 2. A primary station as claimed in claim 1, having tracking means (18, C(i), X(i)) for tracking the direction of an active secondary station with said controllable antenna structure (A(i)).

20 3. A primary radio station as claimed in claim 1, in which the controllable antenna structure comprises a plurality of directional antennas, said data are quality data acquired for secondary station - antenna pairs, said active secondary station is the secondary station of the pair having the highest quality data, and said antenna structure is first controlled to select the antenna of the pair having the highest quality data.

25 4. A method for controlling a multi-directional controllable antenna structure in a primary radio station intended to communicate with secondary stations of a radio communication network, said method comprising:

an acquisition step (110) of acquiring data relating to at least one secondary station, from at least one received signal,

a selection step (130, 150) of selecting, when possible, based on acquired data, at least an active secondary station, and at least an alternative secondary station suitable for becoming active,

a calculation step (140, 160) of calculating the directions of signals received from the selected secondary stations,

a storage step (140, 160) of storing the calculated directions,

a control step (180) of controlling said antenna structure depending on stored directions.

5. A radio communication network having a plurality of secondary stations, and at least one primary radio station as claimed in claim 1.

6. A computer program for use in a primary radio station having a multi-directional controllable antenna structure and intended to be used in a radio communication network having a plurality of secondary stations, said computer program comprising computer program code means to make a primary radio station:

acquire data relating to at least one of said secondary stations, from at least one received signal,

select, when possible, based on acquired data, at least an active secondary station, and at least an alternative secondary station suitable for becoming active,

calculate the directions of signals received from the selected secondary stations,

store the calculated directions,

control said antenna structure depending on stored directions.

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